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Published PDF deposited in [Curve](#) July 2016

**Original citation:**

Gharbal, N. , Sagoo, A. and Shibani, A. (2014) 'Critical Quality Factors and Financial Performance of the Libyan Construction Firms' In: Proceedings of the 2014 International Conference on Industrial Engineering and Operations Management, '4th International Conference on Industrial Engineering and Operations Management (IEOM 2014)'. Held 7-9 January 2014 at Bali, Indonesia. IEOM, 432-441.

URL: <http://ieomsociety.org/ieom2014/pdfs/94.pdf>

Publisher: Industrial Engineering and Operations Management

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# **Critical Quality Factors and Financial Performance of the Libyan Construction Firms**

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## **Abstract**

The paper provides an empirical study on the identification of critical success factors (CSFs) of implementation total quality management (TQM) in Libyan construction industry. Six factors with 53 items were identified to develop questionnaires and to develop roadmap through which the Libyan construction companies could implement quality management.

## **Keywords**

Total quality management (TQM), Libyan construction industry (LCI) critical success factors (CSFs), roadmap.

## **Introduction**

Today, quality management has become the most important force leading to organisational growth and companies success in international and national; market, The ability of Libyan companies to effectively introduce quality management system (QMS) such as ISO and Total Quality Management (TQM) is one of the main challenges to Libyan industries. Total quality management (TQM) is a management philosophy which has been widely implemented in the manufacturing and other services industries, and it shows how significant it can improve the quality in these fields. Few studies attempted to bring the benefits of this philosophy to construction industry. TQM can empower employees and develop the organisations ability of responding to international competition. The main purposes of this study was to identifying the critical success factors CSFs that affect the implementation of TQM in Libyan construction and to develop a road map through which Libyan construction companies could implement and maintain improved quality systems. To achieve these aims the researcher used both questionnaires survey (quantitative) and semi structure interviews as (qualitative). A basic road map of the CSFs for the implementation of TQM was developed from the literature and approved by practitioners and experts in the field.

## **Overview**

The construction industry (CI) in Libya is affected by the country's economic cycle. However, the discovery of oil was a turning point in Libya for industries such as construction, etc. It brought great development to the construction industry in general as the government was able to spend substantially on this sector. The Ministry of Housing in its report of 1986, maintained that Libya suffered from a shortage of skilled labour in the construction industry and the local contractors did not possess the technical, administrative and financial capabilities to undertake medium or large projects. The LCI consists of public and private clients, design, and management and construction specialists. There are many foreign construction companies such as Italian, Chinese, French and Korean. All these companies operate within the country on various projects ranging from large infrastructure projects to the local road projects. The Libyan government has launched one of the largest public infrastructure investment programs in the world so, it can establish a foundation for its continued growth. The Libyan Housing and Infrastructure Board (LHIB), set up by the government has funds amounting to US\$ 50 billion for programs to improve housing, roads, and bridges. On the other hand, the Libyan Industries operates in difficult geographical, such as the social and economic circumstances. However, its operations are concentrated in four main separate regions, influenced by social tribalism and nepotism, fluctuations in oil revenues and foreign workers. Political ideology has played a significant role in determining the current status

## **Literature Review**

The implementation of TQM programs has been considered by a number of authors in recent decades: (Cassidy, 1996; Curry and Kadasah, 2002; McAdam and Jackson, 2002; Magad and Curry, 2003; Wiklund et al., 2000; Yang, 2003 and Dreyfus et al., 2004). All these authors have studied the issues from different perspectives and they explore different points of views among these results. The following factors and related issues are considered as crucial and essential for achieving successful TQM implementation within any organisation, therefore, the features prominent in them are the key elements that affect the TQM implementation programs within any organisation.

**Leadership**

Leadership is the ability to inspire confidence and support amongst those needed to achieve organisational goals (Durbin, 1995; Anderson et al - 1994) described the concept of leadership as the ability of top management to establish practice and a long term vision for the organisation or firm driven by changing customer requirement. Juran and Gryna (1993) certain roles of top management can be identified as establishing quality policies, establishing and deploying quality goals to provide resources. The European Quality Award 1994) and Malcolm Baldrige Quality Award 1999) both recognize the crucial roles of leadership in creating the goal. Hence, the concept of leadership can be defined as: the ability of top management to lead the firm in a continuous manner, pursuing long term overall business success. This can be exemplified by top management participation, top management commitment to employees, education and training.

**Teamwork**

Teamwork is very important for achieve the organisational goals the. It has long been widely- accepted that working individuals together in a team or group having common goals is generally more effective than individuals working alone TQM recognizes that the team approach should not be limited to the internal organisation team, but it should be used to cover vendors and take external customers under their umbrella. TQM benefits from the successful experience of quality circles in Japan.

**Training and education**

Training is an essential factor for any successful quality management program (Burati 1992, Chase, 1993 and Oakland, 2000). Chief executives and quality experts have successfully implemented these in their organisations. Programs of training must target all persons in the organisation as the quality under the total quality management is the responsibility of everyone in the organisation. The employees from the top management to the labour-force must understand the philosophies of TQM. Teamwork is very important to improve all the processes in which the approach for TQM is required.

**Communication**

According to Chase (1993) good communication will result in reducing the fear. Good communication is very important in achieving TQM. All fears which can prevent the employees from being involved. Deming (1986) advises to “drive out fear” this needs to occur for management to change. TQM is a conscious process of improvement. Good communication and a good feedback system are very important in conveying ideas to the management and to incorporate the necessary change required. (Sanders, 1993).

**Customer focus**

Customer focus can be defined as the degree to which a firm continuously satisfies customer needs and as can be expected a successful firm will recognize the need to put the customer first in every decision made. The key to the quality management is maintaining a closer relationship with the customer in order to fully determine the customer need, so the customer should be closely involved in the product design and development with valuable input to every stage. The customer allows an organisation to exist; for every organisation, profit or non profitable, companies, partnerships, departments, functions, groups, or teams therefore, the customer's focus is one of the major elements of the framework of TQM and all elements focus on the total customer satisfaction both external and internal. The total customer satisfaction is the focus of the entire TQM process. Its primary concern is with quality, including all elements needed to satisfy the goals or target of customers for both internal and external, (Saylor, 1996). For TQM to succeed, the senior management of an organisation must be fully committed to quality, and the achievement of quality for the client must be a primary organisation aim. The TQM desires to achieve the aim of quality for the clients and by creating an appropriate culture with shared values and beliefs, the adopted culture should support the aim and quality and encourage the commitment of all organisation members to the end.

**Employees Involvement and Participation**

Successful implementation of a TQM environment requires a committed and skilled workforce to fully participate in the activities carried out to improve the quality. All the employees at all levels within the organisation should be encouraged to take responsibility and communicate effectively toward improving the quality at all production stages. Managers and supervisors must consider the employees as being intelligent and having effective ideas (Prakash et al., 2004). According to (Sayeh et al., 2005; Yang, 2003) all employees within the organisation are considered as internal customers and should be well satisfied if the organisation desires to achieve a full satisfaction for its external customers, this situation indicates to a chain of suppliers and customers relationships involving both internal and external customers. Therefore, TQM programs are strongly focused on the importance of the relationship between both internal and external customers and suppliers. This relationship is known as a quality chain which should not be broken at any stage (Oakland, 2000).

## Culture

The culture within an organisation is defined by (Jeffries et al., 1996) as all the interaction that takes place between employees within an organisation along with the relationships engendered by this behaviour. In line with this, (Swain, 2005) states that the culture can be described as the beliefs which pervade the organisation regarding the procedures used to conduct the business and how the employees should behave and the way they prefer to be treated. Within the TQM culture a co-operative and open culture has to be created by the organisation management in which all the employees have to be made to feel that all of them are responsible for satisfying the organisation's customers. They are going to feel and consider this only if they are involved in the development of the vision, plans and strategies of the organisation. It is crucial for the organisation to achieve a successful implementation of TQM to encourage the employees to participate in all these activities. However, they are unlikely to behave in an acceptable responsible way in the case where they see the management behaving irresponsibly and saying something or acting in opposition of it (Oakland, 2000). It was concluded by (Sayeh et al., 2005) that before thinking of implementing TQM within an organisation it is advisable for the organisation to understand the existing dominant culture. So, as the Libyan is a developed countries and Islamic country the culture is different from country to other however, most of Libyan organisation bureaucracy where the bureaucracy is the greatest day to day problem and major challenge for all Libyan companies Libyan authoritarian and bureaucratic management style have been impeding more participatory and conscious organisation culture. Management should change the organisation's culture and environment and compare their working culture to the culture TQM brings about; this will help discover the problems which exist. Managers can then begin putting a plan in place to help resolve the problems and help move the organisation towards a TQM culture.

## Aim of the research

The main aim of the study described in this paper was to develop a roadmap for TQM implementation in Libyan construction industry based on the identification of critical success factors.

## Research Methodology

Based on this literature review of the above 53 items or statements were derived to construct the questionnaires of this study, the questionnaires survey targeting the population of ISO 9000 certified companies in Libya therefore, A total of 200 hard copies of the questionnaire were distributed to the forty five construction contracting companies in Tripoli (Libya) by researcher. Each questionnaire was accompanied with a covering letter from the researcher providing explanation about the idea and outcomes beyond from the survey. All the questionnaires were distributed and collected by researcher. A total of 130 fully completed questionnaires were returned giving a response rate of 65% about 36% of the questionnaires returned were from the private sector whereas about 63 % were public organisations.

## Reliability test

The first step of analyzing, gathering data then a reliability test was conducted for the entire questionnaires. Cronbach's Alpha (Pallant, 2007) was used as the coefficient of reliability for testing and assessed the internal consistency of the construct of entire questionnaire. The calculated value of Cronbach Alpha was found 0.970. According to (Pallant, 2001), Cronbach's Alpha coefficient of 0.070 or above is considered adequate for testing the reliability of the entire questionnaire, giving proof that the questionnaires for the present survey can be considered as reliable for the used sample. Table 1 shows that the value of Cronbach's alpha derived for the constructs ranged between 0.840 and 0.988. In general reliability coefficient of 0.70 or more is considered good, (Pallant, 2007) according to (Nunnally, 1978) Cronbach's alpha 0.80 or more is significant and reliable. This indicated the instrument developed for measuring TQM implementation using critical successes factors (CSFs) was considered to be reliable. The Cronbach alpha for six constructs ranged between .846 to .98 this indicated that has high reliability of the instrument. Where the overall Cronbach alpha 0.97 confirms these instruments is highly reliable. (Das et al, 2008).

Table 1. Result of data reliability coefficient of each factor of TQM

Construct	Label	Question number	Number of items	Cronbach's alpha
Management commitment and leadership	MCL	1-13	13	.988
Communication	COM	14-20	7	.886
Training and education	TRA	21-26	6	.928
Teamwork	TEA	27-36	10	.935
Employees empowerment	EMP	37-44	8	.974
Culture	CUL	45-53	9	.846

### Results of factor analysis

The result of the output obtained in this analysis could be presented as follows: The 53 items (variables) in the survey were made on a four point likert scale where (1) implied Strongly Disagree and (4) indicated the respondent Strongly Agree with the statements. The 53 item of the questionnaires were inter correlated and subjected to an exploratory factor analysis (EFA) based on the principal component analysis (PCA) with Promax rotation was conducted using PASW package version 17.0 to detect the factor structure in the variable. Inspection of the correlation matrix reveals the presence coefficient of 0.3 and above the Kaiser Meyer Oklin (KMO). That measure of sampling adequacy value was 0.728. The Bartlett's test of sphericity (approx.chi.square) as shown in the Tables 2 reached statistical significance, supporting the factorability of the correlation matrix.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Adequacy		Measure of Sampling .728	
Bartlett's Test	of	Approx. Chi-Square	15910.220
Sphericity		df	1378.000
		Sig.	.000

(Kaiser, 1974) "Recommended accepting value greater than 0.5 as barely acceptable, value between 0.5 and 0.7 are mediocre, value between 0.7 and 0.8 are good, value between 0.8 and 0.9 are great and values above 0.9 are excellent". (Field, 2005). This indicates the value in our case 0.728 that indicate good. According to (Norusis, 1994) the value of Kaiser-Meyer-Olkin (KMO) below 0.5 that indicated this value unacceptable and the high KMO measures allows more meaningful analysis to be obtained, this can be confirmed by Bartlett's Test of Sphericity which tested and Chi-Square test was significant ( $p < 0.001$ ) this indicating that principle component analysis PCA can be meaningful applied. (Torbica, 1997). PCA used to produce a structure matrix of variables after rotation where the number of component determined was based on the criterion that the Eigenvalue for each component must be more than one this method can be referred also as Kaiser criterion however, this derived five principle component which explain 65% of variation in the variable as showed in table 3.

### Factor extraction

Factor analysis with principal component extraction, using a promax rotation, was performed on the fifty -three management practice items to determine the number of factors. Besides using the scree plot as a guide to decide on the number of factors to be extracted, the Kaiser criterion (Eigen value greater than 1) was used, explaining 66%, 5.7%, 5.3%, 3.3%, and 2.8% of the variance, respectively. It can see that the first few factors explain relatively large amount of variance (especially factor 1 where the factor 1 equal 65.924 SPSS extract all factors with Eigen value greater than 1 and the percentage of variance explained in the column which labeled Extraction sums of squared loading.

Table 3. Eigen value, percentage and total variance explained.

Component	Initial Eigen values		
	Total	% of Variance	Cumulative %
1	34.940	65.924	65.924
2	3.058	5.770	71.694
3	2.817	5.315	77.009
4	1.758	3.316	80.325
5	1.532	2.890	83.215
6	.965	1.821	
7	.893	1.686	
8	.849	1.601	

Note: components 9-53 are not shown

The total variance explained the variance by the initial solution, extracted component and rotated component. Table 3 shows the first section the initial eignvalue, the total column gives the eignvalue or the amount of variance in the original variable accounted for by the each components, and the % variance column gives the ratio expressed as percentage of the variance the last column cumulative % this column gives the percentage of variance.

### Factor rotation

Catell (1978) the scree plot revealed a clear break after the five components, scree test, was used to determine that five components be retained for further investigation. promax rotation was used to aid interpretation of the five components. Factor loadings of the 53 items of the scale produced five factors were loading. (Hair et al., 1995) suggested that variables with loadings greater than 0.3 were considered significant; loadings greater than 0.4, more important; and loadings 0.5 or greater were very significant. In this study, these components showing a number of strong loadings. promax rotation used to demons ratable quality as evidence, where the this type of rotation raise the component loading to higher power to achieve the simple structure and to obtain more interpretable component, the promax oblique rotation with power (kappa) value 4 was utilized. (Hassain, 2006). Table shows the number of principle component retained based on the Kaiser's criterion, five component were retained so the five factor solution explained a total of 83.215% of the variance, with component I giving 65.924 %, component 2 giving 5.770%, component 3 giving 5.315%, component 4 giving 3.316%, and component 5 giving 2.890%, as depicted in Table down

Table 4: Eigen values and % of total variance explained of TQM elements

Component	Initial Eigen values			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	34.940	65.924	65.924	34.940	65.924	65.924
2	3.058	5.770	71.694	3.058	5.770	71.694
3	2.817	5.315	77.009	2.817	5.315	77.009
4	1.758	3.316	80.325	1.758	3.316	80.325
5	1.532	2.890	83.215	1.532	2.890	83.215
6	.965	1.821	85.036			
7	.893	1.686	86.722			
8	.849	1.601	88.323			

Note: components 9-53 are not shown

### Rotated component matrix

The rotate component matrix help the author to determine what the component represent where the first component is most highly correlated with MCL shows table 5 where the MCLQ3, MCLQ13, MCLQ12 and so on where there components are better representative. However, it is less with the other four components. The second components are most highly correlated with EMPQ1, EMPQ5, TEAQ4 and son on. The third components are most highly correlated with CULQ5, CULQ4, and CULQ2 and so on. The forth component is most highly correlated with COMQ3, COMQ2, COMQ4 and so on. The last component fifth is most components highly correlated with TEAQ9, COMQ5, and TEAQ6 and so on.

Table 5: Rotated component structure matrix for TQM dimension

FACTOR S	Component				
	F1	F2	F3	F4	F5
MCLQ3	.975				
MCLQ13	.974				
MCLQ12	.947				
MCLQ1	.946				
MCLQ7	.946				
MCLQ11	.942				
MCLQ8	.941				
MCLQ9	.939				
MCLQ5	.930				
MCLQ4	.925				
MCLQ10	.922				
MCLQ2	.904				
MCLQ6	.885				
EMPQ1		.939			
EMPQ5		.926			
TEAQ4		.921			
EMPQ2		.920			
EMPQ4		.919			
TEAQ3		.917			
EMPQ3		.909			

EMPQ6	.890	
TEAQ2	.889	
EMPQ8	.886	
TEAQ10	.886	
TEAQ1	.876	
EMPQ7	.851	
TEAQ8	.843	
CULQ5	.967	
CULQ4	.964	
CULQ2	.958	
CULQ3	.955	
CULQ8	.935	
CULQ9	.931	
CULQ7	.913	
CULQ1	.879	
COMQ3		.948
COMQ2		.936
COMQ7		.906
TEAQ9		.847
TEAQ7		.819
TEAQ6		.799
TRAQ6		.721

#### Extraction method

Principal Analysis. Rotation method: promax with Kaiser Normalisation. In order to determine the number of factor needed to represent the data, the 53 variables measuring the TQM CSFs where the table 4 indicates those there five factors out of 45 critical success variables were extracted with an eignvalue greater than 1 for each, and explaining 65 percent of total variance. The finding shows that there are five construct factors affected for successful implementation TQM in the Libyan construction industry in this research

1. Organisation commitment
2. Communication
3. Work environment and Culture
4. Employee involvement and recognition
5. Training and development.

#### Proposed roadmap of TQM implementation

Successful implementation of TQM depends on several key concepts such as top management commitment, training and education and tools, communication, and leadership the author will discuss these concepts in this chapter (Evan and Lindsay, 2005). In this chapter the propose guideline is used to assess the progress of implementation process which is required during the early years of implementation there for. The purpose of the guidelines is designed to assist and encourage construction organisation for effective implementation of TQM in the context of Libyan. In addition, the TQM guideline is built upon a set of core and concepts which are the constructs, the result of these constructs based on factor analysis FA where these values and concepts provide the foundation of TQM implementation. The five major constructs regarding to the research findings indicates Organisation Commitment, Communication, Employees involvements and recognition, Work environment and organisational Culture and Training and development. This guideline is very vital special for the first two years of implementing especially in case of Libya with the absence of any national quality award.

According to Chase, (1996) there are plan should be followed for implementing TQM. First of all of the implementation is obtain the commitment of the top management especially CEO usually this person has the authority to commit to implement of TQM , also it should be educate the remaining upper level of management to learning about the total quality management , then create quality steering committee where the quality steering is the management team formed to guide the quality effort of the company this team usually consists of president, vice president and departments head, this committee has many function such as establish quality policies of the company, review and evaluate customer and employees, and the other step all employees should be educated in the concept of TQM, policies and implementation plan. Then establish quality improvement team this team usually selected by the steering committee they are given the mission to improve a particular processes.



For implementation of TQM in the Libyan construction organisation there are guidelines which must follow:

**Organisation Commitment**

Table 6: The summary of the guidelines for TQM implementation

CONSTRUCTS	IMPLEMENTATION
1. Organisation commitment	I. Establish quality council II. Establish plan for implementation III. Provide strategic direction for TQM implementation IV. Create corporate TQM vision V. Formulate TQM objectives and strategies VI. Forming TQM steering committees.
2. Communication	I. Use face to face communication by conducting meeting with all employees II. Reinforce face to face communication of the mission III. Encourage open discussion IV. Conduct questions / answers session with employees
3. Employees Involvement and Recognition	I. Gathering all employees to attend face to face meeting to announce the need for QMS II. Gathering all employees to attend face to face meeting to communicate the vision/ mission and quality goal of the organisation III. provide training for all employees in interaction skill IV. keep employees informed and get their feedback
4. Training and Development	I. Provide training for all employees in problem identification and solving skills and other technical skills II. inform and train quality improve team III. Review of motivation system.
5. Work environment & Organisational Culture.	I. Create continuous improvement culture II. Use tools and techniques for continues improvement III. Build continues improvement(CI)

Organisation commitment is the main dynamic that forces TQM into the Libyan organisation, there has been many literatures which have stated this such as (Ahire et al., 1996; Crosby, 1989; Black and Poreter, 1996; Deming, 1986; Garvin, 1983; Motwani, 2001; Zairi, 1999. To enforce TQM top management should set out targets and aims of their vision, set guideline, quality goals and create a mission statement. This should all be written as part of the organisations quality policy. Top management must ensure all levels of the organisation are aware of the policy so it can be implemented correctly.

The response from the questionnaires shows top management has the biggest responsibility of all for implementing TQM. Not only are they responsible for the organisations policy on quality management, yet they must also be dedicated on improving the performance of TQM through all levels of the organisation. The mission statement must convey TQM or any other quality management systems and the effect of its use of the organisations own resources, they must also review all quality systems used. Commitment from top management should be noticeable. Managers should show dedication by actively participating with other workers whilst a TQM environment is enforced. The most important thing they should do is to encourage shop floor staff to also be dedicated to TQM; this will also empower the workers. Managers must show active leadership. To show active leadership there are two components which each leader must have, which is initiative and creativity.



Each resource needed for long-term or short term commitment to quality must be thoroughly planned to assist in the continuous improvement to quality. In any organisation as a quality culture changes the demands and resources needed also change, the organisation must be prepared for this and deal with it in a reasonable manner (Besterfield, 1995). Top managers should establish a quality council, this council should envision TQM and plan carefully the path needed for successful implantation of TQM. Certain techniques must also be used for all workers to agree with the implantation of TQM and so all workers are prepared to support it at all times.

Other key skills top managers need is to have excellent knowledge and eagerness for enhancing quality, they must have an excellent ability and motivation to work with all the workers and to serve as the employees consultant, friend; not just their boss. Managers must make sure all the quality teams are empowered and know all their responsibilities so they can reach the goals and targets the company have made.

TQM policy should contain the corporate values. This policy should set targets for the company and workers based on the performance of the company, performance indicators are needed to do this. The policy should set out targets, goals and objectives through all levels of the organisation because it is essential. The policy should also set out what appropriate resources and training are needed. Preparing of the mission statement should be guided by senior management but should involve all the employees. All channels of communication available should be investigated as this will help create a mission statement which suits all employees at all levels of the organisation.

#### ***Employees' involvement and recognition:***

Employee involvement and commitment has been identified as a critical quality factor, this is because it can affect the time it takes for the implementation of TQM to be successful, employee recognition is one of the most important steps of the quality improvement process (Crosby, 1979). Many researchers have identified this such as (Zairi, 1999; Kanji, 1990, 1995; Oakland, 1993 and 2000; Rao et al., 1996; Ahire et al., 1996; Black and Porter, 1996; Evans and Lindsay, 2001; Kanji, 1995; Oakland, 2000; Thiagarajan and Zairi, 1997). Literature shows that the affect of managers supporting employees in achieving the quality goals are. Middle management and shop floor employees must actively participate in keeping the company organized, as they are key internal stakeholders. Employees must be well motivated so they can work through the challenges that TQM implementation brings, they must be provided with suitable training as well as incentives which will help motivate the workers further by rewarding them suitably when they work very hard. Motivation and empowerment is a crucial thing employees must have, it supports the quality scheme and helps TQM implementation happen faster and smoother.

The responses gathered showed employee participation is best done by using the following methods:

- Top managers must arrange training for all of the management at all levels; they should be trained in communication, effective meeting and leadership skills. Employees working at operational levels should be trained in problem identification and solving, quality improvement and other technical skills.
- Strengthen employee buy-in to TQM: The only way to reinforce and support commitment to TQM in Libya; is by ensuring there is constant face-to face talks between middle management and employees.
- Initiating efficient communication systems between the different levels of the organisation.
- Persuade workers to contribute and help achieve the companies' vision, values and targets and let the quality policy be known to all workers.
- Disseminate information throughout the company: By ensuring all workers are aware of the potential benefits TQM can bring they are more likely to be more motivated and help implement TQM. This will be best accomplished by arranging assemblies or gatherings where employees are lead by top managers and notified of any changes or new targets. This will show top manager dedication because the top managers will have to provide appropriate resources and tools to the employees.

#### **8.3.3 Communication to improve quality**

Evans and Lindsay (2005) indicate TQM requires improved communication to support improvement. Traditional lines of communication are slow and inaccurate. However people need to communicate across organisational levels to solve problems and implement change. All forms of communication play an important role in generating awareness and helping mobilise creative energies; these are key for achieving the goals of TQM. In the Libyan construction sector, the top-down, bottom-up communication model must be used. Top-down communication lets employees know the visions and strategies top management have set out, and bottom up communication allows employees to portray their views about the implementation process to top management. An open communication system removes any barriers between the employees and top management. The advantages of employees being more active and committed are that the whole company recognises the values, visions and quality goals. Empowerment will not only be a requirement but the employees will be more confident and can

communicate much better to each other or the managers. All the training employees will receive to make them more aware of the TQM concepts (Besterfield, 1995). The most recent method of guiding organisations towards a more focused, complex economical and competitive future is empowering employees. TQM implementation will fail if there is no empowerment of employees. For a company to be successful the employees should be empowered, given more authority, power and independence. A rewards and recognition system should be created in the company to credit and acknowledge employees hard work, this will help motivate the workers (Kumar and Jhe, 2010). Therefore Libyan organisation should be rewards their employees for their contribution to quality.

### ***Training and Development***

Awareness training is one of the first things given to employees, Awareness training helps employees learn how to adjust to a TQM culture and what to do differently for quality improvement to occur. Other key skills should be taught such as problem identification and problem solving skills. Teamwork and decision making can be encouraged by training employees how to communicate effectively to others; this will also help employees get stronger at their work faster and at a more stable rate. Training should not just be provided to the workers; middle managers will need to be trained on basic tools and quality principles, they must also learn how to teach other employees and help sub-ordinates work in an appropriate manner. Training will help all workers and managers become more educated on how to adapt to the new culture, it will make the change less hasty and it will be more thriving

### **Summary and Conclusion**

From the questionnaire, the literature review and the interview results some several conclusions related to the findings of the research and direct to the Libyan construction companies that are implement the TQM are listed below:

- a) This study has identified the of CSFs of TQM implementation in the Libyan construction companies. The organisations were revealed to have a low level of implementation of the CSFs, this was due to: very low knowledge of QMS, methods and tools and lack of top management commitment and determination. This caused: a lack of vision, inadequate tactical competence and employee involvement and a lack of measurement.
- b) In Libyan organisations, it was showed that the quality initiatives and practices are still in their early stages, most of the organisations interviewed were progressing with quality improvement programmes without any precise quality vision or purpose. As a result from external pressure from international competitors ISO 9000 was launched, this was also used as a prestigious thing to have, this is because some of the other local companies have been certified with the ISO 9000.
- c) 3) Libyan companies have started their quality journey by having the ISO 9000 certificate. The certification of ISO 9000: 2000 is a useful stepping stone for implementing the philosophy of TQM; however the ISO 9000 certification alone will not guarantee an automatic improvement in the performance of the organisations. Good performance is impossible to have with a poor organisational structure and feeble written policies.
- d) 4) ISO 9000 brings many advantages to Libyan companies, for example the QMS can create good document systems, this is important because it will be very useful to companies and currently, as we discovered from the companies interviewed, and these are very poor. This new documentation method may play an extremely important role in measuring the TQM progress in the Libyan environment. The implementation of TQM is a huge culture and working adjustment for the organisation as well as the employees. The employees will be used to more traditional approach. For change to be affective and successful Libyan managers must change their attitudes, educate themselves and their employees and they must not rely on old policies as these were written twenty five years ago and are out-dated.
- e) 5) TQM implementation can be used as a tactical weapon to cope with recent changes in Libyan construction and international construction.

The Libyan companies should improve the workers skill and qualities of making materials, enhance training schemes are crucial for successful TQM implementation.

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